

PROCEEDINGS
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NEW GENERA AND SPECIES OF NORTH AMERICAN
THYSANOPTERA FROM THE SOUTH AND WEST.

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The present paper adds to the known Thysanopterous fauna of North America four new genera and six new species, while three species and one variety are relegated to synonymy. This latter is not surprising in view of the number of workers who have described species after but little work on the group.

Our knowledge of the western and southern Thysanoptera was in 1908 limited to a paper by Dudley Moulton on the Californian species.* One year later, however, Mr. D. L. Crawford, then a student at Pomona College, Claremont, California, was a member of a party of two which made an entomological expedition to Guadalajara, Mexico; and after his return he described a supposed new genus and several new species.†

The new genus, to which he gave the name *Rhaphothrips*, has been suppressed by Bagnall,‡ who directs attention to the fact that the form described is a nymph.

Another species, which Mr. Crawford described as *Liothrips mcconnelli*, belongs in the genus *Leptothrips* Hood,§ as do *Criptothrips* (sic!) *californicus* Daniel|| and *Phyllothrips fasciculata* (sic!) Crawford.¶ Furthermore, I can detect no differences

* U. S. Dept. Agr., Bur. Ent., Tech. Ser. 12, Pt. III, pp. 39-68; 1907.

† Pomona College Journal of Entomology, Vol. 1, pp. 109-119; Dec., 1909; and Vol. II, pp. 153-170; March, 1910.

‡ Ann. Soc. Ent. Belg., Tome LIV, p. 462; 1910.

§ Ent. News, Vol. XX, p. 249; June, 1909.

|| Ent. News, Vol. XV, p. 293; Nov., 1904.

¶ Pomona Coll. Journ. Ent., Vol. I, p. 105; Dec., 1909. The variety *stenoceps* Crawford (idem, p. 108) belongs in synonymy, having been erected for the reception of specimens of the typical form which had not become crushed in the mounting. The figure which he gives on p. 107 shows this fact very clearly.

whatever between a cotype of *meconnelli* received from Mr. Crawford and two of Dr. Hinds' cotypes of *Cryptothrips aspersus**—the type of the genus—in the collection of the United States National Museum.

Liothrips bakeri Crawford belongs in or near *Mesothrips* Zimmerman.†

Æolothrips vespiformis Crawford has been properly made the type of a new genus,—*Franklinothrips* Back.‡

Anthothrips variabilis Crawford (of which I have ten cotypes) is identical with the type of *A. gowdeyi* Franklin§ in the collection of the United States National Museum; the species should be known as *Haplothrips gowdeyi* (Franklin). It is interesting to compare Dr. Franklin's figure of the head and prothorax (Pl. LXIII, fig. 8) with that given by Crawford (Pom. Coll. Journ. Ent., Vol. II, p. 166, A).

Idolothrips angusticeps Crawford was compared at the time of its description with *Megalothrips* (?) *spinuosus* Hood,|| to which it is only distantly related (being placed in a different family by Bagnall!), the existence of four North American congeners|| and five Central and South American ones** having been either overlooked or ignored by its describer. It is almost certainly synonymous with one of these.

Thrips abdominalis Crawford has been since redescribed under the name *Thrips femoralis* by P. R. Jones,†† of the Bureau of Entomology, notwithstanding the fact (as I have been reminded by Mr. H. M. Russell) that the latter name was used by Blanchard in 1851 for a species from Chile.‡‡

The collection upon which are based the new generic and specific names herein proposed was made four years ago in southern Texas and northern Mexico by Mr. Charles A. Hart, Systematic Entomologist of the Illinois State Laboratory of Natural History. Many hundreds of specimens were taken, all

* Proc. U. S. Nat. Mus., Vol. XXVI, p. 205; 1902.

† Bull. de l'Institut Botanique de Buitenzorg, No. VII, p. 12; 1900.

‡ Ent. News, Vol. XXIII, p. 73; Feb., 1912.

§ Proc. U. S. Nat. Mus., Vol. XXXIII, p. 724; March 4, 1908.

|| Can. Ent., Vol. XL, p. 306; Sep., 1908.

¶ *Confiterarum* Pergande, and *flavipes*, *armatus*, and *tuberculatus*, Hood.

** Schötti Heeger, and *longiceps*, *assimilis*, *affinis*, and *foveicollis*, Bagnall; the last mentioned has been recently removed by Bagnall to the genus *Dicaiothrips* Buffa and separated into two species, *foveicollis* and *championi*.

†† U. S. Dept. Agr., Bur. Ent., Tech. Ser. 23, Pt. I, p. 4; Jan. 26, 1912.

‡‡ Historia física y política de Chile, Zool., Tomo VI, p. 150.

of which, through Mr. Hart's generosity, are in my private collection. In a previous paper, published in these Proceedings, two of the new species were described and assigned to a genus previously unknown from the United States; one of these was named *Diccratothrips harti* in recognition of its collector.

Mrs. E. C. Green (nee L. M. Hart) is to be thanked for her careful outlines and first washes of the two species illustrated in the accompanying plate.* And, as usual, Mr. R. S. Bagnall, the English Thysanopterist, has aided in comparing certain species with the types of Old World genera.

SUBORDER TEREBRANTIA HALIDAY.

FAMILY LEOLOTHRIPIDÆ HALIDAY.

STOMATOTHRIPS gen. nov.

(στόμα, mouth; θρῑψ, a wood worm.)

Head short, distinctly wider than long, broadly received into prothorax, and produced between the non-projecting eyes. Antennae nine-segmented, moderately slender, inserted very close together; segments 7-9 more or less compactly united. Maxillary palpi clearly eight-segmented; labial palpi five-segmented, the basal segment very short. Prothorax wider than long, slightly longer than head; posterior margin without strong spines. Fore tibiae unarmed;† second fore tarsal segment with the usual hook-like appendage. Fore wings expanded apically, where they are twice as broad as near base. Abdomen very broad at segments 5 and 6, subpetiolate; ninth abdominal segment of male not prolonged at the posterior angles into hooked, clasping organs.

Type: *Stomatothrips flavus* sp. nov.

This genus resembles *Orothrips* and *Erythrothrips*, Moulton, in the increased number of segments of the maxillary and labial palpi‡ and in that the ninth abdominal segment of the male is simple. From both it differs in the exact number of palpal segments and in having wings which are expanded apically; furthermore, the antennal segments are free in *Orothrips*, and in *Erythrothrips* the head is elongate and of different structure anteriorly.

That such genera as *Orothrips*, *Erythrothrips*, and *Stomatothrips* have been found only in North America is of especial interest because of the

* The true light and shade relation has been lost to a great degree in the reproduction of the original drawings, due to the use of an inferior quality of Chinese white.

† Moulton states that *Orothrips* has "all tibiae armed" (Tech. Ser. 12, Part III, Bur. Ent., U. S. Dept. Agr., p. 45) but his figures contradict this statement (Pl. I, figs. 1 and 4). For a drawing of an armed tibia see Uzel, "Monographie der Ordnung Thysanoptera," Tab. V, fig. 38.

‡ Moulton, in his generic description of *Erythrothrips* (Tech. Ser. 21, Bur. Ent., U. S. Dept. Agr., p. 35), gives the number of segments in the labial palpi as three; but twenty-two lines below, in his description of the type species, states, "labial palpi four segmented."

light which it seems to throw on the evolution of the Thysanoptera. These genera probably represent the most primitive known members of the order; for in no group of insects does specialization result in an increase in the number of segments either in the body or its appendages. *Stomatothrips* is thus best placed at the beginning of the Ælothripidae, possessing as it does more palpal segments than any other known genus.

In an ancient type we would expect to find broad wings; and this is actually the case. Although the palpi of *Palæothrips fossilis* Scudder,* a Tertiary species described from the White River deposits of Utah, are unfortunately unknown, it is interesting to note that the fore wings are broad and similar in venation to those of *Stomatothrips*, though a little wider in proportion to their length.

Carrying these generalizations a little further,—if we may safely do so on such scant evidence,—we are led to the conclusion that the order Thysanoptera originated in or near the tropics of the New World. And early in its evolution it seems that a branch diverged to form the Urothripidae (at present known only from the Old World) which, having in the course of their adaptation lost the ovopositor they at one time possessed, naturally approach the Tubulifera in general appearance. Mr. Bagnall has already noted† that in many fundamental characteristics the Terebrantia and Tubulifera resemble each other more closely than do the Urothripidae and Phlæothripidae; but he nevertheless assigns the family Urothripidae to the Tubulifera. In my opinion the family should be made the type of a new sub-order abundantly distinguished by the presence of eleven instead of four spiracular openings—certainly a character of high taxonomic value in view of its constancy in the two sub-orders at present recognized.

***Stomatothrips flavus* sp. nov.**

Fig. 1, *a* and *b*.

Female.—Length about 1.6 mm. (1.47–1.77 mm.). Color testaceous, head and prothorax slightly darker; pterothorax with an indistinct, V-shaped, brown cross-band at middle of dorsum; abdomen with faint indications of a pale cross-band on segments 1, 2, and 3; antennal segments 1–4 pale yellowish white, the remainder of antenna black; tibiae shaded with black.

Head about one and one-fourth times as wide as long, rather deeply sulcate between antennae, and slightly narrower and shorter than prothorax; cheeks slightly arcuate; dorsal and lateral surfaces faintly transversely striate, set with numerous minute spines. Eyes large, pilose, posteriorly prolonged on ventral surface, and with large, distinct facets. Ocelli equidistant. Antennae moderately slender, about as long as combined lengths of head, pro- and mesothorax; segment 1 broadest, nearly as wide as long, tapering toward apex; 2 distinctly longer and narrower

* Proc. Bost. Soc. Nat. Hist., Vol. XI, p. 117, 1867; Geol. Mag., First Series, Vol. V, p. 221, 1868; Bull. U. S. Geol. Surv. Terr., I, p. 222, 1875.

† Proceedings International Entomological Congress, II, 283–288; 1911.

than 1; 3-6 long, cylindrical, successively decreasing in length, 4 distinctly shorter than 3; 7 slightly longer than 6, usually about equal to 5 in length, and narrowing apically; 8 abruptly shorter, one-half to one-third as long as 7 and twice to five times as long as 9, which is subconical and usually about as long as wide. Segments 1-4 pale yellowish white, 3 and 4 slightly more whitish, 4 clouded at extreme apex with black;

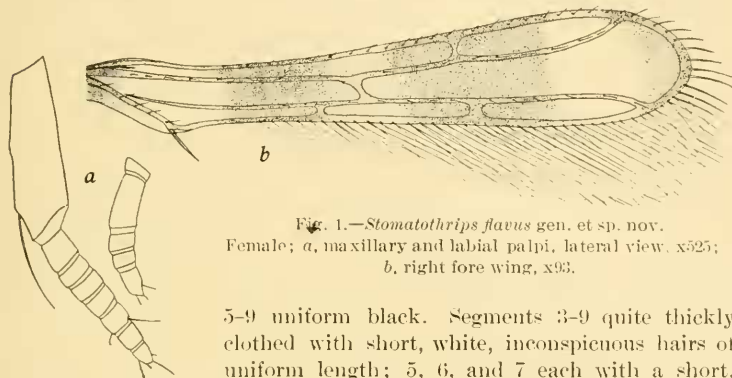


Fig. 1.—*Stomatothrips flavus* gen. et sp. nov.
Female; a, maxillary and labial palpi, lateral view, x525;
b, right fore wing, x93.

5-9 uniform black. Segments 3-9 quite thickly clothed with short, white, inconspicuous hairs of uniform length; 5, 6, and 7 each with a short, linear, pale, sensory area on ventral surface.* Mouth cone normal to the group. Ventral surface of head sparsely pubescent and with two pairs of prominent spines, one of which is subantennal and the other of which is situated between the posterior angles of the eyes, just anterior to the chitinous thickening.

Prothorax subrectangular, slightly wider than long, and a little wider than head; sides and posterior angles rounded; surface with numerous very minute spines. Mesothorax broader than prothorax, anterior angles broadly rounded, mesonotum transversely striate. Metathorax narrowed posteriorly, metanotum nearly smooth. Wings long; fore wings expanded apically, broadest at apical sixth, where they are just twice as wide as at basal fourth; venation normal to the group; spines on anterior portion of ring vein short, slightly projecting beyond margin of wing; first and second longitudinal veins set with about 20 and 14 short spines, respectively. Color of fore wings pale brown, with two white cross bands, one of these being a narrow one at basal seventh and the other a slightly wider one at apical seventh; intermediate brown area somewhat paler at middle; hind wings white.

Abdomen subpetiolate, at sixth segment more than twice as wide as at base and one and one-half times as wide as pterothorax; posterior margin of segments 1, 2, and 3 whitish; segments 9 and 10 tinged with yellow or white.

Measurements of a female from Odin, Illinois.—Length, 1.73 mm.; head, length, .17 mm.; width, .21 mm.; prothorax, length, .21 mm.; width, .24 mm.; pterothorax, width, .30 mm.; abdomen, width, .47

* Similar areas are almost certainly present on segments 3 and 4, but I have not been able to make them out on my specimens.

mm. Antennal segments: 1, 39 μ ; 2, 48 μ ; 3, 162 μ ; 4, 141 μ ; 5, 75 μ ; 6, 62 μ ; 7, 66 μ ; 8, 23 μ ; 9, 12 μ ; total, .63 mm.; width, .025 mm.

Measurements of a female from Monterey, Mexico.—Length, 1.47 mm.; head, length, .15 mm.; width, .21 mm.; prothorax, length, .20 mm.; width, .23 mm.; pterothorax, width, .30 mm.; abdomen, width, .35 mm. Antennal segments: 1, 33 μ ; 2, 56 μ ; 3, 132 μ ; 4, 93 μ ; 5, 67 μ ; 6, 49 μ ; 7, 52 μ ; 8, 25 μ ; 9, 14 μ ; total, .517 mm.; width, .025 mm.

Male.—Similar to female, but slenderer and with longer antennae.

Measurements of a male from Monterey, Mexico.—Length, 1.07 mm.; head, length, .147 mm.; width, .174 mm.; prothorax, length, .160 mm.; width, .181 mm.; pterothorax, width, .245 mm.; abdomen, width, .192 mm. Antennal segments: 1, 36 μ ; 2, 45 μ ; 3, 154 μ ; 4, 137 μ ; 5, 92 μ ; 6, 77 μ ; 7, 78 μ ; 8, 24 μ ; 9, 8 μ ; total, .65 mm.; width, .027 mm.

Measurements of antenna of male from Brownsville, Texas:—1, 31 μ ; 2, 39 μ ; 3, 118 μ ; 4, 106 μ ; 5, 75 μ ; 6, 67 μ ; 7, 75 μ ; 8, 17 μ ; 9, 8 μ ; total, .54 mm.; width, .027 mm.

Described from a good series of both sexes as follows: Monterey, Mex., July 5, 1908, C. A. Hart; Matamoras, Mex., June 30, 1908, C. A. H.; "Tlahualilo, Mex., Sep. 12, 1910, on cotton, J. P. Conduit" (Coll. A. C. Morgan); Brownsville, Texas, June 23, 25; July 2, 1908, C. A. H.; Dubois, Illinois, July 2, 1909, C. A. H.; Odin, Illinois, June 25, 1909, C. A. H. It appears to be common on grass and weeds, as all of Mr. Hart's collections were by sweeping.

Type locality.—Monterey, Mexico.

The pale coloration will distinguish this species at a glance.

No drawing of the head and prothorax is given because in a large series of carefully mounted specimens I have been unable to find a perfectly satisfactory dorsal view. The structure of the insect is entirely responsible for this. I have experienced the same difficulty in mounting *Franklinothrips respiformis*.

FAMILY THIRIPIDÆ HALIDAY.

BREGMATOTHRIPS gen. nov.

(βρέγμα, the upper part of the head; θρῑψ, a wood worm.)

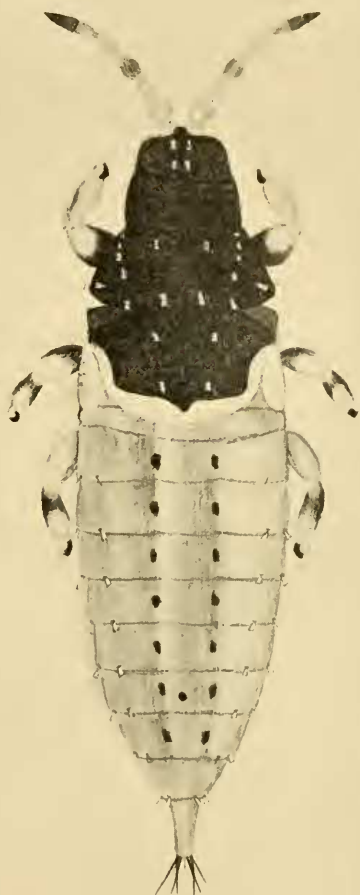
Head long; vertex swollen, produced, overhanging and slightly surpassing the base of antennae. Eyes prominent, protruding. Antennae eight-segmented, style much shorter than segment 6; all sense cones simple. Maxillary palpi three segmented. Prothorax elongate, distinctly longer than head and nearly as long as wide, broadest near base; posterior angles with two long spines; all other prothoracic spines relatively small. Wings, when present, moderately slender and without color pattern; fore pair with two longitudinal veins reaching nearly to tip; anterior margin of fore wings set with very long and slender spines which are scarcely distinguishable from the fringe. Abdomen acute, the ninth segment elongate; spines long and strong; ninth abdominal segment of male not provided with two pairs of chitinous dorsal projections.

Type.—*Bregmatothrips venustus* sp. nov.



L. M. Hart et J. D. H. del.

Bregmatothrips venustus,
Female, x77



Rhopalothrips bicolor,
Female, x104

This genus is suggestive of *Aptinothrips*, *Physopus* (s. l.), *Oxythrips*, and *Rhaphidothrips*. In it should be placed *Thrips binervis* Kobus,* a Javanese species differing from *venustus* in the much slenderer form and the longer head and prothorax.

In such genera of the Thripidae as *Aptinothrips*, *Pachythrips*, *Prosopothrips*, *Apterothrips*, *Amblythrips*, and *Agerothrips* the ocelli and wings are always wanting; in *Chirothrips* and *Limothrips* the ocelli are present in the females but wanting in the wingless males; in the brachypterous form of the species described by Uzel as *Physopus nigriventris* only the two posterior ones are present; in the type species of the present genus the brachypterous form may have three, two, or no ocelli, while the macropterous form always has three. It will thus be seen that the presence of ocelli and wings are not even characters of specific significance and that their use in generic diagnoses can not be considered of any value whatever.

***Bregmatothrips venustus* sp. nov.**

Plate IV, first figure; Fig. 2, *a* and *b*.

Female: forma brachyptera.—Length about 1.0 mm. Color dark blackish brown to black, with pterothorax, first abdominal segment, intermediate antennal segments, and legs, yellow, shaded slightly with brown; prothorax slightly paler than head.

Head about as long as wide, slightly shorter than prothorax; vertex swollen, produced anteriorly, broadly rounded as seen from above; dorsal surface faintly cross striate, armed with three pairs of moderately long slender bristles, the first pair situated opposite center of eyes, the second pair placed almost directly behind the posterior ocelli, and the third pair situated just behind the eyes. Eyes moderate in size, protruding, setose. Ocelli lacking or with the anterior one greatly reduced or wanting. Antennae moderately slender, about 1.8 times as long as head; segments 1 and 2 brown, the latter paler toward apex and at middle; 3 to 5 pale yellow, sometimes slightly shaded with brown; 6-8 brown, concolorous with head; sense cones pale, slender, simple; formula: 3, 0-1; 4, 0-1; 5, 1-0; 6, 1-1+¹.

Prothorax very slightly broader than long and somewhat longer and wider than head; posterior angles each with two long, slender spines; anterior angles with a pair of smaller, weaker bristles about equal in size to the posterior marginal pair; all other spines small and scarcely visible. Mesothorax slightly wider than prothorax, fore angles broadly rounded; metathorax closely united to mesothorax and of about equal width throughout; meso- and metathorax uniform pale lemon yellow. Wings short, reaching to first abdominal segment. Legs rather short and stout, yellow in color; femora and bases of tibiae, especially the posterior pair, often shaded with brown.

Abdomen moderately long, slender, distinctly broader than pterothorax;

* I am indebted to Mr. A. C. Morgan for the privilege of examining a slide of this species in the collection of the Bureau of Entomology.

apex sharply conical; segment 10 with a longitudinal dorsal suture; spines on segments 9 and 10 long, strong, dark in color, and prominent. Segment 1 of abdomen pale yellow, concolorous with pterothorax; remainder of abdomen dark blackish brown, concolorous with or slightly darker than head and prothorax.

Measurements.—Length, 1.02 mm.; head: length, .135 mm.; width, .140 mm.; prothorax: length, .158 mm.; width, .180 mm.; pterothorax: width, .200 mm.; abdomen: width, .263 mm. Antennal segments: 1, 24 μ ; 2, 33 μ ; 3, 39 μ ; 4, 33 μ ; 5, 31 μ ; 6, 51 μ ; 7, 11 μ ; 8, 15 μ ; total, .237 mm.; width, .018 mm.

Female: forma macroptera.—Similar to *forma brachyptera*, differing as follows: Length about 1.1 mm. Color nearly uniform dark blackish brown, with pterothorax very slightly paler and with legs and intermediate antennal segments brownish yellow, the former shaded with brown or black.

Ocelli always present, subequal in size, equidistant.

Mesothorax distinctly broader than prothorax and metathorax. Wings long, nearly attaining tip of abdomen, very pale in color, shaded with a light wash of brownish; fore wings with two longitudinal veins reaching nearly to tip; anterior vein usually joined by two cross veins to the costa and with about nine pale bristles, of which two are

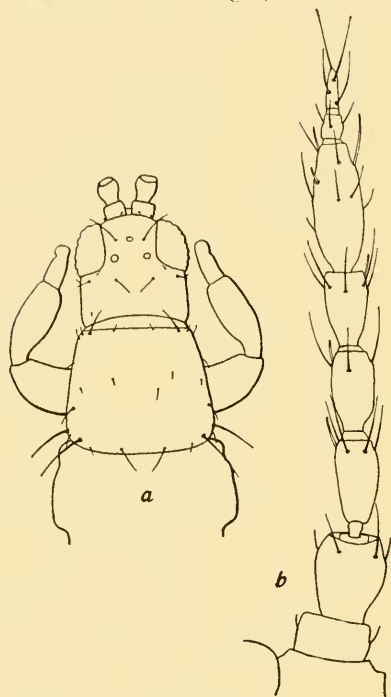


Fig. 2.—*Bregmatothrips venustus* gen. et sp. nov. Female; a, head and prothorax, *forma macroptera*, $\times 106$; b, left antenna, *forma brachyptera*, $\times 334$.

usually near apex and six or seven near base; the posterior vein can usually be seen arising from the anterior at basal three-sevenths; it is set with eight or nine long spines of which the apical two are slightly more separated at base; hind wings slightly paler than fore wings.

First abdominal segment blackish brown.

Measurements.—Length, 1.14 mm.; head: length, .128 mm.; width, .141 mm.; prothorax: length, .164 mm.; width, .186 mm.; mesothorax: width, .233 mm.; metathorax, width, .203 mm.; abdomen: width, .270 mm. Antennal segments: 1, 23 μ ; 2, 32 μ ; 3, 36 μ ; 4, 33 μ ; 5, 32 μ ; 6, 54 μ ; 7, 10 μ ; 8, 14 μ ; total, .234 mm.; width, .018 mm.

Described from several females of both forms, as follows: Matamoras,

Mexico, June 30, 1908, C. A. Hart; Brownsville, Texas, June 25 and 29, July 2 and 9, 1908, November 20, 1911, C. A. H.; Grand Tower, Illinois, July, C. A. H. and J. D. H.; Cobden, Illinois, June 27, 1909, C. A. H.

Type locality.—Brownsville, Texas.

The short winged form may easily be recognized, for the transverse band is visible to the naked eye. It occurred commonly in sweepings.

SUBORDER TUBULIFERA HALIDAY.

FAMILY PHLEOTHIRIPIDÆ UZEL.

Genus *Haplothrips* Amyot et Serville, 1843.

***Haplothrips graminis* sp. nov.**

Fig. 3.

Female.—Length about 1.5 mm. Color dark blackish brown to almost black, with a reddish cast due to the presence of maroon hypodermal pigmentation; fore tarsi, apical portion of fore tibiae, and bases of intermediate antennal segments, yellow or yellowish.

Head somewhat longer than wide, broadest at middle; cheeks gently rounded, usually very slightly convergent posteriorly; vertex rounded, slightly produced, the anterior ocellus slightly overhanging; dorsal and lateral surfaces set with several short inconspicuous spines; postocular bristles rather short, pointed, less than one-third as long as head. Eyes slightly more than one-third as long as head, not protruding. Ocelli anterior; posterior ocelli opposite anterior third of eyes. Antennae about one and one-half times as long as head, moderately stout; segments 1 and 2 dark blackish brown, the latter paler toward apex and at middle; 3 yellow, shaded laterally with brown; 4-8 successively darker in color, ranging gradually from brownish yellow to blackish brown; segment 3 subconical, swollen, very slightly narrower and shorter than segment 4; 4-6 subglobose, pedicellate, the first as broad as its length exclusive of pedicel; 7 oblong, pedicellate, truncate at apex, and broadly united to 8, which is subconical; sense cones short, moderately stout, those on segments 3 and 4 blunt; formula: 3, 0-1; 4, 2-2; 5, 1-1+¹; 6, 1-1; 7 with one on dorsum near apex. Mouth cone blunt, about half as long as head, slightly surpassing middle of prosternum.

Prothorax a little more than two-thirds as long as head, and (including coxæ) about 1.8 times as wide as long, surface nearly smooth; anterior marginal spines greatly reduced in size and scarcely visible; others blunt,

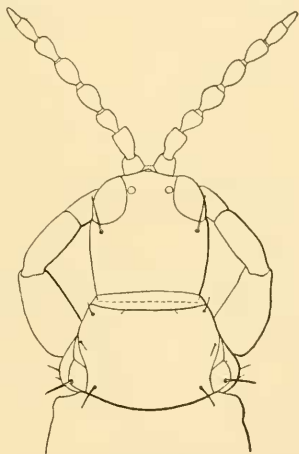


Fig. 3.

Haplothrips graminis sp. nov.
Female, head and prothorax, x96.

the two pairs at the posterior angles longest; midlaterals short. Pterothorax slightly wider than prothorax, about as broad as long, sides gently arcuate, slightly converging posteriorly. Wings present, clear; fore wings distinctly narrowed at middle, with a slight brownish cloud at extreme base, and with the subapical fringe on the posterior margin double for about seven hairs. Fore tarsi armed with a small, acute tooth.

Abdomen slightly wider than pterothorax. Tube rather short, less than .6 as long as head, about 1.7 times as long as its basal width, suffused with hypodermal pigmentation.

Measurements.—Length, 1.5 mm.; head: length, .200 mm.; width, .171 mm.; prothorax: length, .150 mm.; width (including coxæ), .266 mm.; pterothorax: width, .290 mm.; abdomen: width, .320 mm.; tube: length, .117 mm.; width, at base, .057 mm.; at apex, .032 mm. Antennal segments: 1, 33 μ ; 2, 39 μ ; 3, 37 μ ; 4, 42 μ ; 5, 39 μ ; 6, 36 μ ; 7, 36 μ ; 8, 25 μ ; total, .29 mm.; width, .029 mm.

Male.—Similar to female but slightly smaller (length about 1.2 mm.), and with slenderer antennæ.* Fore femora often swollen; fore tarsi armed with a rather large, stout tooth. Abdomen slender.

Described from a good series of both sexes taken by Mr. C. A. Hart at Brownsville, Loma, and on Padre Island opposite Pt. Isabel, Texas, and at Matamoras, Mexico, in June, July, and November. It was rather common in sweepings, and was once taken in flowers of *Clematis drummondii*.

Type locality.—Brownsville, Texas.

This species is very close to *H. gowdeyi* Franklin. But in a series of over thirty specimens the prothoracic and postocular bristles are always pointed and shorter, with the anterior marginals greatly reduced in size; the antennæ are always much darker in color; and there is no sense cone on the inner margin of the third antennal segment.

The figure given herewith was unfortunately made some time ago from a specimen which, though freshly-killed, had the head unusually narrowed at base.

SCOPEOTHRIPS gen. nov.

(σκωπαιος, a dwarf; θριψ, a wood worm.)

Body very short, broad, compact. Head fully as broad as long, cheeks subparallel; front produced between eyes, separated from their anterior margin by a deep furrow, and bearing the anterior ocellus at its extremity. Mouth cone short, heavy, attaining fore margin of mesothorax. Antennæ eight-segmented, all segments free and of normal form. Legs short, stout; fore legs of male often greatly swollen, the femora serrate on inner margin and with a strong basal tooth; tarsi and inner apex of tibiae each with a strong tooth in the male. Abdomen moderately large, broad at base, thence tapering to tube. All prominent bristles, excepting those at apex of tube, infundibuliform.

Type.—*Scopiothrips unicolor* sp. nov.

* Trybom notes in his original description that this is true also of *H. bagnalli*.

To the present genus, which is probably best placed near *Haplothrips*, I have assigned a single, minute, wingless species remarkable for the very broad, infundibuliform bristles, the peculiar structure of the vertex, and the swollen, armed femur of the male.

Scopæothrips unicolor sp. nov.

Fig. 4, *a* and *b*.

Female: forma bracyptera.—Length about .9 mm. Color dark blackish brown, pterothorax often paler when viewed by reflected light; tarsi, apices of fore tibiae, and antennal segments 3–6, yellow. Dorsal surface sculptured, shining.

Head slightly wider than long; cheeks subparallel, with a short, collar-like widening at base; dorsal and lateral surfaces with deep, close, transverse striae and short stout spines; postocular bristles short, infundibuliform, similar in size and shape to a pair at the posterior angles of the eyes. Eyes rather coarsely faceted, with occasional brief spines between facets. Posterior ocelli directed antero-laterally. Antennae slender, slightly more than twice as long as head; segments 1, 2, 7, and 8 concolorous with body, excepting apex of 2, which is distinctly yellowish; 3–6 uniform pale yellow, clavate, pedicellate; 7 oblong, pedicellate; 8 subconical; sense cones moderately stout, almost perfectly transparent; formula: 3, 0–0; 4, 1–1; 5, 1–1+¹; 6, 1–1; 7 with one on dorsum near apex.

Prothorax about .7 as long as head and (including coxae) about two and one-half times as wide as long; all usual spines present, very short and broadly infundibuliform;* coxal spine wine-glass-shaped as seen from above; dorsal surface at each side with a depressed and concentrically striate area which is lobed mediad; remainder of dorsal surface transversely striate. Pterothorax large, broader than prothorax, subrectangular; mesonotum closely transversely striate (the striae bent posteriorly at the median line) and with two pairs of dilated equidistant bristles on posterior edge; metanotum with a pair of similar bristles at middle (about

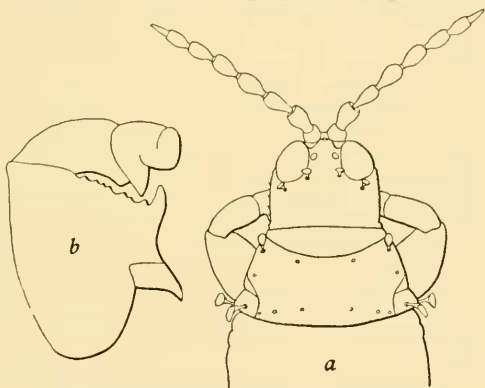


Fig. 4.—*Scopæothrips unicolor* gen. et sp. nov.
a, head and prothorax, female, x93; *b*, right fore leg, male, ventral view, x283.

* The bristles are all pale and transparent, and in balsam mounts visible under high power only after a very careful adjustment of the light. In the figure the bases of several have been shown although the bristles themselves could not be distinguished against the dark-colored notum. This is true also of *Rhopalothrips bicolor* sp. nov.

as far separated as those of mesonotum) and with very close longitudinal striae. Legs stout; fore tarsi armed with a moderately long, acute tooth. Wings attaining first abdominal segment, the three subbasal spines infundibuliform.

Abdomen broadest at segment 2, thence tapering almost straight to tube. Tube between .6 and .7 as long as head, less than twice as wide at base as at apex; sides straight. Marginal and internal abdominal bristles very short, enormously dilated, the former curving posteriorly; bristles at apex of tube short, pointed.

Measurements.—Length, .92 mm.; head: length, .14 mm.; width, .15 mm.; prothorax: length, .10 mm.; width (inclusive of coxæ), .25 mm.; pterothorax, width, .27 mm.; abdomen: width, .30 mm.; tube: length, .09 mm.; width at base, .053 mm.; at apex, .029 mm. Antennal segments: 1, 21 μ ; 2, 36 μ ; 3, 39; 4, 42 μ ; 5, 42 μ ; 6, 39 μ ; 7, 36 μ ; 8, 29 μ ; total, .285 mm.; width at segment 4, .025 mm.

Male: forma brachyptera.—Slightly shorter than female; fore legs usually greatly enlarged, the femora serrate on inner margin and with a strong basal tooth; fore tibia with stout, blunt tooth on inner margin of apex; tarsal tooth very strong.

Paratype: No. 14,693, U. S. National Museum.

Described from an excellent series of both sexes, taken during June and July on *Opuntia*, at Brownsville, Texas, by Mr. Charles A. Hart. *

This interesting species is the smallest known Tubuliferon. In living specimens the enormously dilated bristles appear as minute white dots.

RHOPALOTHRIPS gen. nov.

(ρόπαλον, club; θρίψ, a wood worm.)

Body very short, broad, compact. Head as broad as long, widest in basal third, narrowed anteriorly; eyes scarcely extending onto ventral surface. Mouth cone short, heavy, attaining fore margin of mesothorax. Antennae eight-segmented, the last three segments compactly united; second segment subglobose, conspicuously widened; third segment short and conspicuously narrower; antennal spines and sense cones very slender and weak. Legs short, stout. Abdomen moderately large, broad. All prominent body bristles, excepting those at apex of tube, infundibuliform.

Type.—*Rhopalothrips bicolor* sp. nov.

It is difficult to say just where in our present classification this genus should be placed. The union of the three apical segments of the antennae suggests *Dermothrips hawaiiensis* Bagnall and *Cephalothrips monilicornis* Reuter, and other points of structure would seem to indicate relationship with the genus *Haplothrips*. It probably belongs in the *Haplothrips-Zygothrips-Cephalothrips-Hindsiana* series with *Scopæothrips* gen. nov.

In the preceding generic description I have abandoned the use of presence or absence of ocelli and wings, because such characters are of no value even as specific ones. In certain Phleothripid genera, such as *Trichothrips* Uzel and *Allothrips* Hood, whose species live under bark or

in other secluded places, the ocelli are lacking in apterous or brachypterous generations and present in macropterous ones; while in the genera which constitute the main bulk of the family and whose species do not spend their lives in hidden places, the ocelli are always, and the wings usually, present. It is interesting to note, however, that the reduction of the eyes and the absence of ocelli can not always be ascribed to a decrease in the light intensity, for this wingless species has no ocelli, yet lives exposed to the rays of a tropical sun on the leaves of an intensely xerophilous plant.

Rhopalothrips bicolor sp. nov.

Plate IV, second figure; fig. 5, *a* and *b*.

Female: forma brachyptera.—Length about .9 mm. Head, prothorax, meso- and metanotum black; abdomen and metapleuræ white, segments 2–8 of the former each with a pair of small granulate black dots on dorsum; legs white, the tibiae of second and third pairs banded with black, anterior and middle femora black at base; antennæ white, segments 4 and 6–8 dusky, the last two especially so. (By transmitted light the heavy white pigment often appears nearly black, in some specimens almost reversing the coloration as described above.) Dorsal surface non-shining, densely granulate in dark colored portions, the granules tending to coalesce into lines of reticulation; ventral surface smooth.

Head slightly wider than long, widest in basal third and narrowed toward eyes, with a median earina above insertion of antennæ; dorsal and lateral surfaces sparsely spinose with brief, transparent, pointed spines; postocellar bristles large, dilated; a second pair of prominent bristle-insertions visible at inner posterior angle of eyes; postocular bristles wanting. Eyes with coarse, separated facets, between which are minute, stout spines. Ocelli wanting. Antennæ short, stout, about twice as long as head; segments 1, 2, 3, and 5 nearly white; 1 and 5 slightly darkened with yellowish; 4 and 6 dusky brown, the former paler at apex, the latter paler at base; 7 and 8 uniform blackish brown; segment 2 subglobose, pedicellate, conspicuously the broadest in entire antenna; 3 short, slender, claviform, conspicuously narrower and weaker than 4; 4 and 5 clavate, pedicellate; 6–8 successively shorter, together forming a compact, pedicellate club; sense cones and spines exceedingly small and weak; segment 2 with a broad, infundibuliform bristle on inner side of dorsum; segment 3 without sense cones.

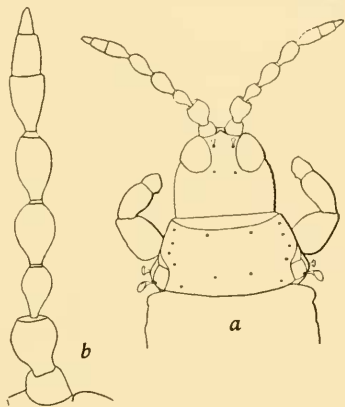


Fig. 5.

Rhopalothrips bicolor gen. et sp. nov.

Female; *a*, head and prothorax, x93;

b, right antenna, x206.

Prothorax about .7 as long as head and (inclusive of coxæ) approximately two and a half times as wide as long; all usual spines present, very short and broadly infundibuliform;* coxal spine wine-glass-shaped as seen from above; dorsal surface at each side with a broad, shallow fovea. Pterothorax large, broader than prothorax, subrectangular; meso- and metanotum each with one pair of large, dilated bristles near posterior margin. Legs stout; fore tarsi armed each with a minute, acute tooth. Wings attaining first abdominal segment, the three subbasal spines infundibuliform.

Abdomen slightly broader than pterothorax, heavy, roundly narrowed to tube. Tube a little more than .6 as long as head, less than twice as wide at base as at apex, sides straight. Marginal and internal abdominal bristles very short, enormously dilated, the former curving posteriorly; bristles at apex of tube short, pointed.

Measurements.—Length, .93 mm.; head: length, .126 mm.; width, .144 mm.; prothorax: length, .090 mm.; width (including coxæ), .224 mm.; pterothorax: width, .240 mm.; abdomen: width, .270 mm.; tube: length, .079 mm.; width at base, .044 mm.; at apex, .026 mm. Antennal segments: 1, 21 μ ; 2, 35 μ x 32 μ ; 3, 27 μ x 18 μ ; 4, 33 μ x 25 μ ; 5, 36 μ ; 6, 35 μ ; 7, 24 μ ; 8, 18 μ ; total length of antenna, .23 mm.

Paratype: No. 14,694, U. S. National Museum.

Described from forty-nine females taken July 4, 1908, on *Opuntia* at Topo Chico (near Monterey), Mexico, by Mr. Charles A. Hart.

With the exception of *Cryptothrips dentipes* Reuter, which has a pale prothorax, this is the only bicolored species of the suborder.

Genus LIOTHIRIPS Uzel, 1895.

***Liothrips varicornis* sp. nov.**

Fig. 6, *a* and *b*.

Female.—Length about 2.1 mm. Color dark blackish brown or black; tarsi, articulations of legs, apices of antennal segments, and tip of tube paler; third antennal segment abruptly pale yellow.

Head about one and one-fifth as long as wide, broadest across cheeks; the latter gently arcuate, slightly converging posteriorly; vertex elevated, produced, anterior ocellus distinctly overhanging; dorsal and lateral surfaces finely transversely striate, set with several short, inconspicuous spines; postocular bristles pointed, about as long as eyes. Eyes large, finely faceted, not at all protruding, one-third as long as head. Ocelli anterior; posterior ocelli opposite anterior third of eyes. Antennæ twice as long as head, moderately slender; segments 1 and 2 nearly concolorous with body, 2 slightly paler toward apex and at middle; 3 pale yellow, slightly clouded apically; 4–8 nearly concolorous with body, slightly paler at apex; segments 3–6 clavate, pedicellate; 7 oblong, pedicellate; 8 subconical; sense cones slender, colorless; formula: 3, 0–1; 4, 1–1+1; 5, 1–1+1; 6, 1–1+1; 7 with one on dorsum near apex. Mouth cone acute, slightly surpassing base of prosternum.

* See note under *Scopothrips unicolor*, p. 71.